

E. Remarks

Reconsideration and allowance in view of the amendments made and comments which follow are respectfully requested.

In the Office Action the Examiner rejected claims 1-3, 9-10 and 15 as allegedly anticipated by Octo-Square Brilliant in Lapidary Journal, March 1994 ("Octo-Square"). The Examiner also rejected claims 6-7, 12-13, 17 and 20 as allegedly anticipated by Crossed Bottom Square in The Techniques of Master Faceting, Vol. 1, 1985 ("Crossed Bottom Square"). The Examiner also rejected claims 7-8, 11, 14 and 18 as being allegedly anticipated by Montana Burst in Gram 1 Faceting Designs (allegedly published in 1995) ("Montana Burst").

Claim 19 was rejected as allegedly obvious over Crossed Bottom Square, in view of case law.

The Examiner indicated that claims 4-5 and 16 recited allowable subject matter.

In response to the Office Action, claims 4 and 16 have been rewritten in independent form. The language, and thus the scope, of claim 4 remains the same as original claim 4 of the '745 patent.

In the Office Action dated June 9, 2004, the Examiner stated that the Information Disclosure Statement was objected to because U.S. Patent No. 38,314 appeared to be an incorrect number for the Bruhl patent. Applicant submits a new PTO-1449 form which correctly lists the Bruhl patent as U.S. Patent No. 138,314. A copy of this patent was included as Exhibit 15 in the Information Disclosure Statement filed with the present application. Applicant requests that this reference be made of record, and that the Examiner initial the 1449 form.

In response to the Office Action, without conceding the correctness of the Examiner's rejection concerning claim 1, but solely to advance prosecution, applicant has amended claim 1 to recite that said table corner length is substantially less than the table side length. In the Octo-Square Brilliant, table corner lengths are not substantially less than the table side lengths, but instead appear to be equal to the side lengths. Accordingly, claim 1 is believed to distinguish patentably over this reference.

New claim 21 is original claim 1 and also reciting that all of the steps in each side of the crown are defined by straight lines from the girdle to the table. In Octo-Square Brilliant, the top facet in each side is not defined by the same straight lines from the girdle as the first two steps. For at least this reason, claim 21 is believed to distinguish patentably over this reference.

Applicant respectfully traverses the rejection of claim 3 based on Octo-Square Brilliant. Any attempt to read claim 3 on Octo-Square Brilliant will result in not all of the rib lines extending in a substantially straight line when viewed from the bottom of the culet. Instead of following a substantially straight line, one would take a turn of about 45 degrees as one travels from the girdle to the culet. A turn of 45 degrees would not be a substantially straight line. Applicant points out that the rib line according to claim 1 need not be in a perfectly straight line, as one of ordinary skill in the art may decide to make some minor bends or make minor angular changes in the line, and still have the line be a substantially straight line according to the invention defined by this claim. Claim 3, which has been rewritten in independent form, is believed to be patentably distinct over Octo-Square Brilliant, for at least the reason discussed.

Continuing with the rejections based on Octo-Square Brilliant, without conceding the correctness of the Examiner's position regarding claim 9, applicant has amended claim 9 to recite that each of the steps in each side of the crown have the same facet corner angle. Support for this feature may be found in the drawing Figures which show the two steps of the crown to have the same facet corner angle. In the Octo-Square Brilliant, the top facet in each side has different facet corner angles than the facet corner angles in the first two steps.

With respect to claim 10, applicant respectfully traverses the Examiner's rejection of this claim. Claim 10 recites that the pavilion is devoid of any facet intersection lines parallel with the girdle. The bottom of the Octo-Square Brilliant has two short facet lines which cross the culet, each of which appear to be parallel to the girdle. Accordingly, Octo-Square Brilliant does not anticipate claim 10.

With respect to claim 15, without conceding the correctness of the Examiner's position, applicant has amended claim 15 to recite that the table corners are substantially less than the table sides, as

shown in Figures as filed. In contrast, in the Octo-Square Brilliant, there is no table “corner” that is substantially less than a table “side”.

Applicant will now address the rejections based on the Crossed Bottom Square which has been cited in rejections of claims 6, 7, 12 and 13. Without conceding the correctness of the Examiner’s rejections, claims 6, 7, 12 and 13 have been amended to recite that table has four cut corners. The Crossed-Bottom Square has only four sides in its table, and no cut corners. Claims 6, 7, 12 and 13 are thus believed to be patentably distinct over this reference.

With respect to the rejection of claim 19 on obviousness grounds over the Crossed Bottom Square, this claim depends on claim 13, which as discussed above is believed to distinguish patentably over Cross Bottom Square. Claim 19 is believed to be patentable for at least the same reasons as its base claim 13.

Applicant will now address the rejections based on the Montana Burst used in rejections of claims 7, 8, 11 and 14. Applicant respectfully traverses this rejection.

First, applicant does not believe that the Montana Burst reference has been established as prior art under 35 USC §102 to the present application. As described in the Information Disclosure Statement previously filed, the Montana Burst reference was cited to applicant by a third party. The reference has a copyright notice of 1995, but it is not clear that this reference was actually published in 1995 and available to the public within the meaning of §102 prior to applicant’s original filing date. The presence of a copyright notice does not establish that this reference was published and publicly available within the meaning of §102(a) on the alleged date. Generally, authors of works place copyright notices on works before they are published (in the copyright sense) and the work itself may not get published immediately or at all. Also, the document contains a website address of www.faceters.com which was apparently not available until 1999 at the earliest, based on the copyright notice of the website. Applicant thus believes that it has not been established that the Montana Burst reference is prior art under §102. In any case, applicant will address this reference on its purported teachings, without conceding that this reference constitutes prior art.

Turning now to the Montana Brust reference, the Montana Burst is an equilateral octagon gemstone rather than a “cut cornered” stone when viewed from the top. Claims 7, 8, 11 and 14 recite a “cut cornered” gemstone thereby distinguishing over the Montana Burst Octagon. As understood in the art, the term “cut cornered” means a shape in which a polygon (such as a triangle, square or rectangle) has its corner tips cut off or truncated to form cut corners visibly smaller than the sides.

In support of this construction of the term “cut cornered” applicant submits the definition for “cut-corner triangle cut” from the GIA (Gemological Institute of America) Diamond Dictionary, Third ed., 1993, attached hereto as Exhibit A. The last page of Exhibit A is from a later CD version of this GIA dictionary which includes a picture of a cut-corner triangle cut, wherein the upper two triangle corners are cut, leaving two long sides visibly longer than the two cut corners.

Applicant also submits GEMS AND PRECIOUS STONES, Simon & Schuster, 1986, pp 58-72 (Exhibit B) which is also relevant to the meaning in the industry of the terms “cut cornered” or “truncated” as applied to gemstones. Fig. 29 shows both a rectangular cut and an emerald cut (described on p. 63 as having truncated corners), and Fig. 31 shows both a scissors cut and a scissors cut with truncated corners. Applicant believes that the terms “cut cornered” and “truncated corners” are synonymous in the gemstone art, because they both refer to a square, rectangle or triangle stone having its corners cut off to form cut corners visibly shorter than the sides. Applicant also submits GIA Report 0421726 (Exhibit C) which is already a reference in the subject patent, and GIA Report 10790778 for Cut-Cornered Square Mixed Cut (Exhibit D), both of which show truncated stones described by GIA as “cut-cornered” stones.

Applicant also submits as Exhibit E a copy of U.S. Patent No. 6,430,963, which distinguishes its octagonal gemstone from the cut cornered gemstone of the subject patent in col. 2, lines 10-19. Although this ‘963 patent is dated after the filing date of the subject patent, it is relevant to the distinction that those of ordinary skill in the art have attributed to the terms “cut cornered” and “octagonal”.

Consistent with the foregoing references, the term “cut cornered” as used by applicant means a predominantly square or rectangular shaped cut with its four corner tips cut off, leaving four sides

visibly longer than its four cut corners.

In view of the foregoing, the applicant believes that the term "cut cornered" does not include within its scope equilateral octagons of the type shown in the Montana Burst reference. For at least this reason, applicant believes that the Montana Burst reference does not anticipate independent claims 7, 8, 11 or 14.

In view of the foregoing, application believe that the application is in condition for allowance, and such action is earnestly solicited.

If a telephone interview would be of assistance in advancing prosecution of the subject application, applicants' undersigned attorneys invites the Examiner to telephone them at the number provided below.

Other than the additional claims fees, no additional fee is deemed necessary in connection with the filing of this Response. However, if any fee is required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 03-3125.

Respectfully submitted,



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D. Amendment to drawing figures

No amendments to the drawing Figures are proposed.



Form PTO-1449

U.S. Department of Commerce
Patent and Trademark OfficeAtty. Docket No.
57226-A-RE/PJP

Serial No.:

INFORMATION DISCLOSURE STATEMENT
(Use several sheets if necessary)Applicant
Robert S. Greeff

Filing Date

Group

U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	1 3 8 3 1 4	April, 1873	Bruhl			

FOREIGN PATENT DOCUMENTS

Document Number	Date	Country	Class	Subclass	Translation
					Yes No

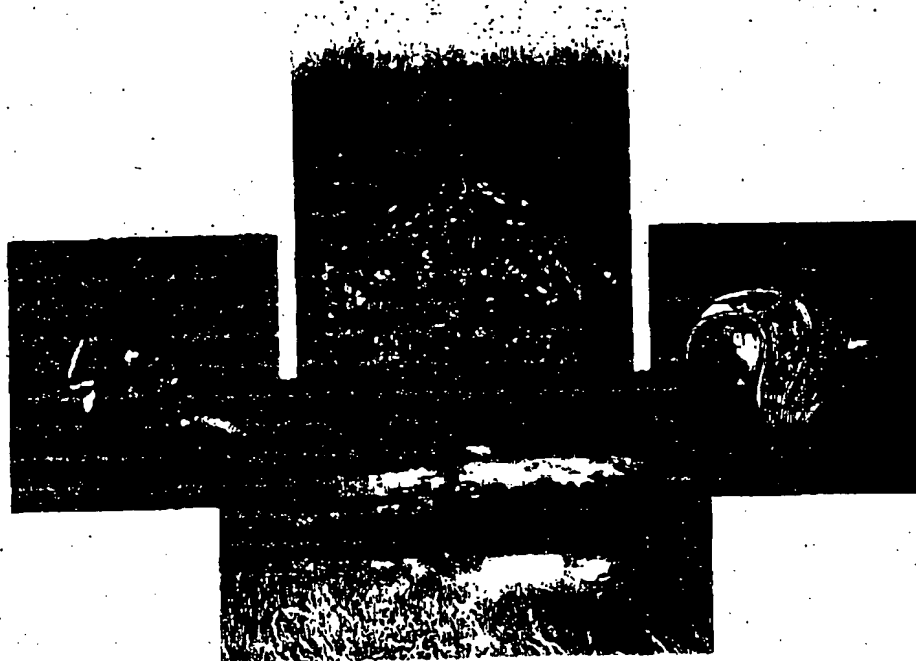
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this from with next communication to applicant.

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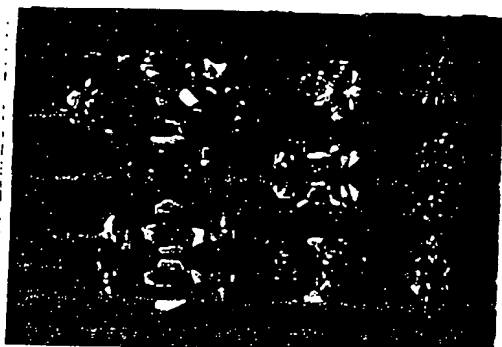
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Cullinan VIII > cyclotron

Cullinan VIII, 6.80 ct. oblong brilliant-cut diamond set with the Cullinan VII in a diamond brooch.

Cullinan IX, 4.39 ct. pear-shape diamond set in a ring.

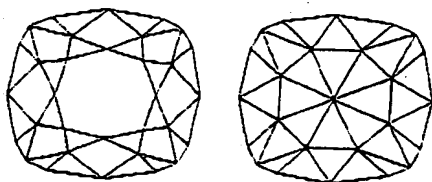


Replicas of the nine major stones cut from the Cullinan, vertically from the left, I and II; center, V, IV, III; right, VII, VIII, IX, VI.

Cumberland Diamond, 32 ct. Indian diamond named for William Augustus, Duke of Cumberland, and probably bequeathed to him in 1820 by either his father, King George III of England, or his mother, Queen Caroline. Returned to Germany as part of the Hanoverian Crown Jewels in 1858, the Cumberland disappeared until 1935 when Cartier declined to buy it on account of its "banal color and shape." Current whereabouts unknown.

cushion, see ANTIQUE CUSHION BRILLIANT, CUSHION BRILLIANT, CUSHION SHAPE.

cushion brilliant, GIA GTL term for a diamond with a rectangular or squarish girdle outline,



cushion brilliant

curved sides, rounded corners, and brilliant-cut facets.

cushion crystal, rough diamond crystal with a flattened shape.

cushion shape, GIA GTL term for rectangular or squarish brilliants with curved sides and rounded corners.

cushion-shape brilliant, see CUSHION BRILLIANT.

cut, (1) shape and style of a polished diamond, such as a round brilliant or an emerald cut. (2) proportions and finish of a diamond. One of the Four Cs; also called make. See FINISH, MAKE, PROPORTIONS.

cut-corner triangle cut, modification of the triangle cut on which two, or all three, corners are removed.

cut grading, process of evaluating and describing the proportions and finish of a polished diamond, principally with regard to their overall effect on brilliance and dispersion and the balance between them. See AGS CUT-GRADING SYSTEM, FINISH, FINISH GRADING, MAKE, PROPORTIONS, PROPORTION GRADING, SCAN, D.N. SCALE FOR THE QUALITY OF CUT.

cuttable, rough diamond or a portion thereof which has the shape, clarity, and color to produce a polished stone suitable for setting in jewelry. Also called cuttable rough. See GEM QUALITY.

cutter, see DIAMOND CUTTER.

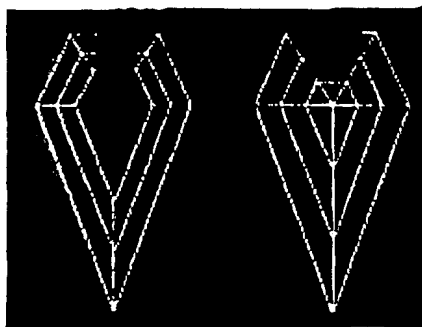
cutting, see FASHIONING.

cutting machine, machine used to polish some or all of the facets on a diamond. See AUTOMATIC BRUTING MACHINE, AUTOMATIC POLISHING MACHINE.

cutting style, see CUT.

CVD, see CHEMICAL VAPOR DISPOSITION.

cyclotron, atomic particle accelerator used principally in the study of the structure of mat-



cut-corner triangle cut, modification of the triangle cut on which two, or all three, corners are removed.

cut grading

cuttable

cutter, see DIAMOND CUTTER.

cutting, see FASHIONING.

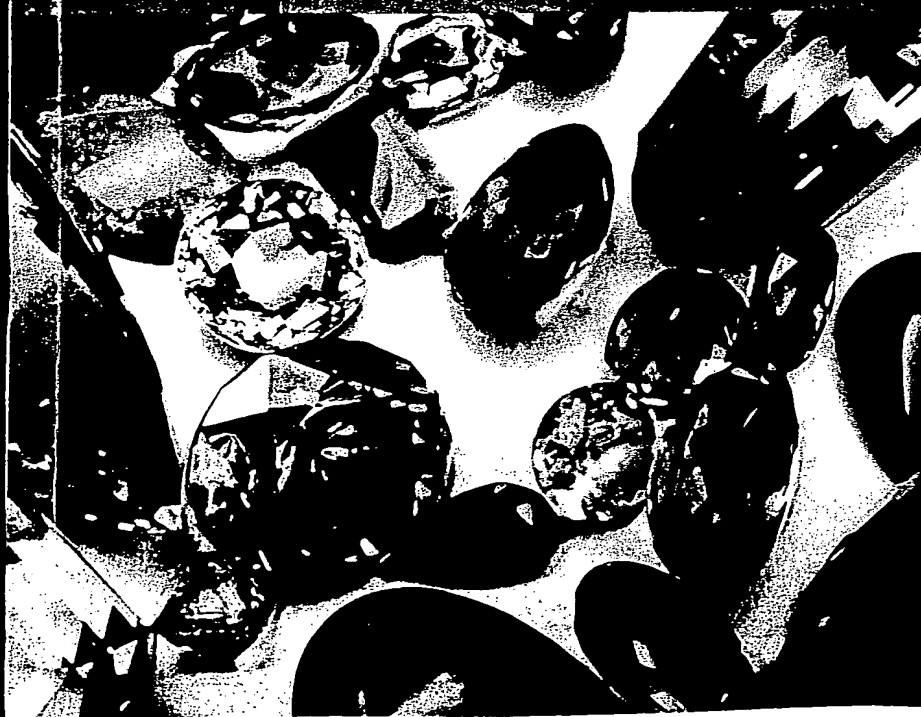
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Another antique brilliant cut: here too, the roughly rectangular outline with curved sides is known as "cushion" shape.

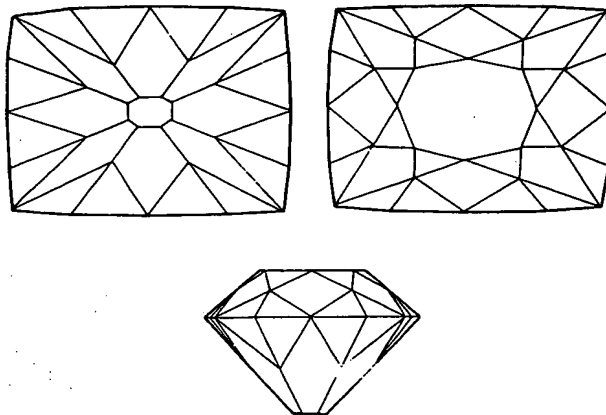


fig. 25

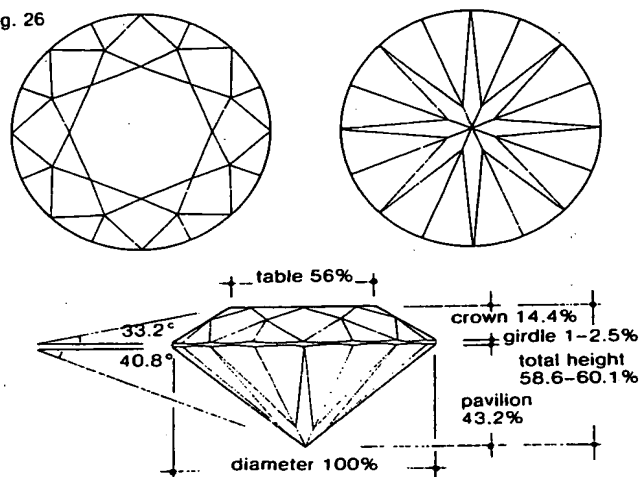
cut is the most common, but diamonds are also cut into oval, pear or marquise shapes, in which the number and shape of the facets is the same as those used for the brilliant cut (Fig. 28). Alternatively, some diamonds are cut into rectangular shape with truncated corners, and a crown and pavilion consisting of successive series of trapezoidal facets. This is known as the step, trap, or "emerald" cut (Fig. 29). It gives a less lustrous effect, with lower dispersion, but reduces weight loss when the uncut crystal is in the shape of an elongated octahedron. The problem of weight loss during cutting is very important, given the rarity and value of diamond: as a rule, a brilliant-cut stone weighs only 40 percent or so of the original rough stone.

When the faceted cut is used for stones other than diamond, the rules followed are less precise. The main aim is normally to reduce loss of weight as much as possible, and in colored stones with distinct pleochroism to have the most attractive color visible from the table facet.

In most faceted stones (as in Fig. 24), one can distinguish the main, table facet, which is generally larger than the others, and forms the topmost part of the stone; the crown, consisting of numerous facets linking the table to the girdle; the girdle, which is the band at the widest part of the stone, onto which a

Modern brilliant cut: the proportions and angles are designed to give the best luster and dispersion.

fig. 26



setting can be fitted; and the pavilion, which is the lower, convex portion, of roughly conical shape, sometimes terminated by a bottom facet (the "cutlet") parallel to the main one, but generally much smaller. Depending on the type and arrangement of the facets, the most common cuts are as follows:

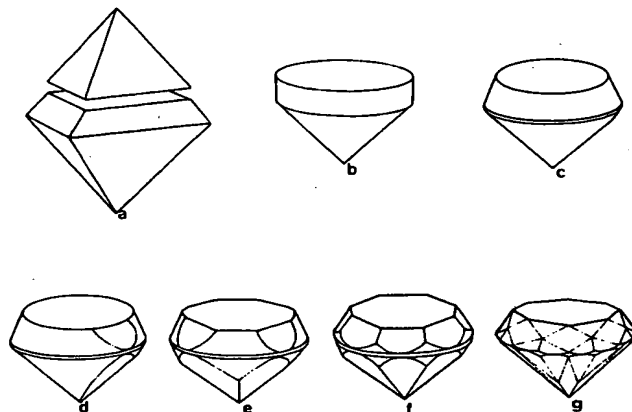
- brilliant, when the shape and number of facets are as prescribed;
- step or trap, if both the crown and pavilion consist of successive series of trapezoidal facets (the "steps");
- mixed, if they have a more or less brilliant-cut crown and step-cut pavilion.

Depending on their general outline, they may be round, oval, marquise, pear-shaped, rectangular, emerald (rectangular with truncated corners), cushion (vaguely rectangular, but with curved sides), triangular, and even star-shaped. The most common shapes are shown on pages 69-72 (Figs. 28-31).

The methods used for cutting stones have not changed essentially over the centuries, although the details have been greatly improved. The normally quite small stones are fixed to the tip of a mushroom-shaped support called a *dop* stick, by means of a very strong cement or low melting point solder. Nowadays, dops are also made with a special clamp that grips the stone

Step by step illustration of the cutting of a brilliant from an octahedral diamond crystal.

fig. 27



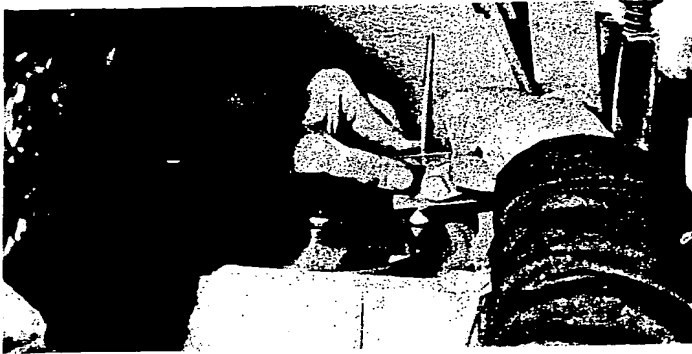
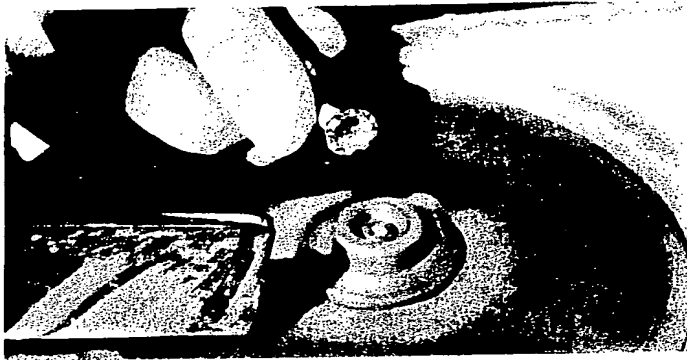
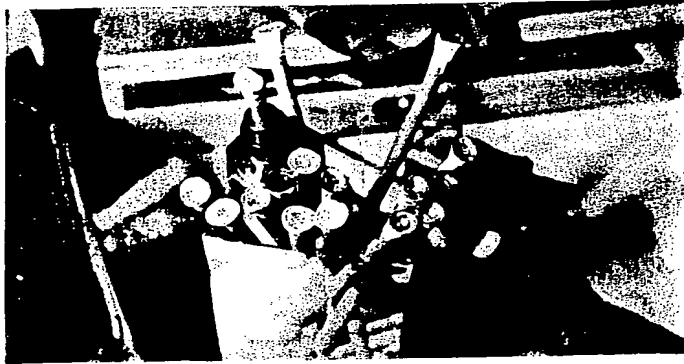
firmly, but allows just enough play for cutting operations. For the cabochon cut, grinding machines not very different from the types used for sharpening knives are employed, firstly with a coarser grain to remove any rough surfaces and give the future gem its shape, then with a finer one to polish the surfaces. The final polishing is usually done on a felt, leather, or fabric-covered revolving horizontal lap, onto which very fine, abrasive powder has been sprinkled.

The cutting of faceted stones is more complex and is carried out in several stages. A revolving horizontal metal lap dressed with a paste of very fine abrasive powder plus oil or water, is used for grinding.

For diamonds, if the rough stone is fairly irregular in shape, advantage is taken of its easy cleavage to reduce it to the typical octahedral form or, at any rate, obtain more easily workable pieces. If the rough stone is already octahedral, part of one pyramid is removed (Fig. 27a), using a sawing disc charged with diamond powder in oil, or by working it against another diamond, in the position where the table facet will be produced (Fig. 27b). It is then rotated on a lathe, bringing it into contact with another diamond, to give it a conical-cylindrical shape (Fig. 27b, c). These two stages are collectively known as "bruting."



These two pages show some stages of cutting. Opposite: Marking the cleavage planes of a diamond with India ink (top); cleaving the diamond (bottom). This page: Dop sticks with the stones soldered to them; cutting the crown; polishing the table.



The facets are then cut on a cast iron lap dressed with a mixture of diamond dust and oil (because of its exceptional hardness, diamond is only appreciably abraded by another diamond), starting with the 4 main top facets for the crown and the 4 main back facets for the pavilion (Fig. 27d, e). The exact position of the first 4+4 main facets is very important, and this stage is carried out by highly skilled personnel. The subsequent facets (Fig. 27f, g) are less difficult to produce. This stage constitutes the cutting proper. The cutting and polishing of the facets can be done in a single operation, or in two stages. In the latter case, a slightly coarser diamond powder is used to begin with, to save time, then a finer one, for polishing.

With gems other than diamonds, if the rough stone is large and irregular in shape, it is first sawn into pieces of a suitable size for cutting, although few precious stones (topaz and spodumene are among them) have strong enough cleavage for this to be done advantageously. The operation, which also serves to eliminate any badly flawed areas of the rough stone, can also be done with a small hammer—wielded, of course, with suitable care.

The subsequent stage, which is normally carried out on a rotating, flat-disc, metallic (steel, copper or tin) lap, using fairly coarse abrasives, serves to give the rough stone the required shape and dimensions, but leaves surfaces which are translucent due to lack of polish. As with diamond cutting, this is known as bruting. The final stage, which is performed on a horizontal lap with very fine abrasives, serves to polish the individual facets. Many different abrasives are used, the commonest being emery, garnet, chromium oxide, and iron oxide.

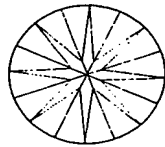
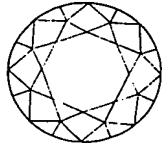
Cutting is an operation that requires time (especially for diamonds), precision, and relatively simple tools. For these reasons, less valuable stones and small diamonds are only worth cutting nowadays where labor is cheap and in plentiful supply. Important centers for diamond cutting are: Antwerp, Amsterdam, New York, Tel Aviv, Bombay, and Cape Town, while other stones are normally cut in the countries where they are extracted, e.g. Sri Lanka, India, Thailand, Brazil, but also in Israel (Tel Aviv) and Europe (Idar-Oberstein).

Automated faceting machines have recently been introduced but at present they have a relatively limited application.

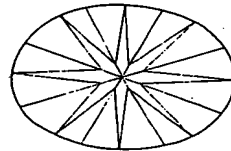
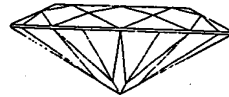
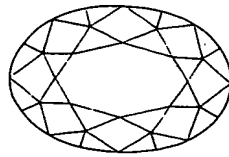
Main Types of Faceted Cut

fig. 28

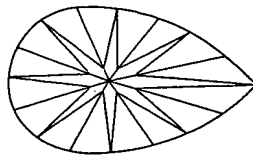
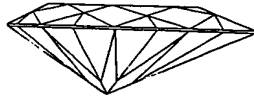
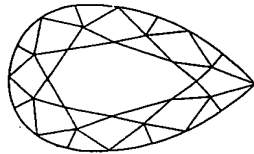
Brilliant and related fancy cuts



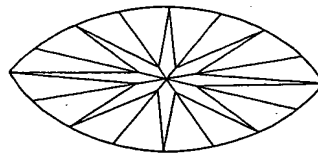
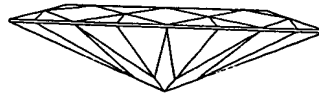
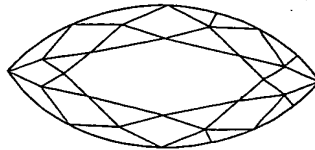
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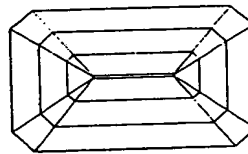
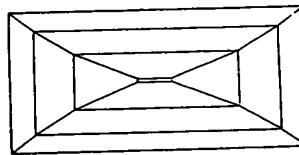
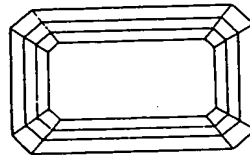
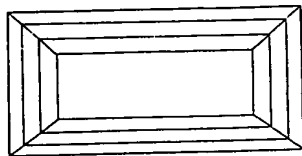
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marquise

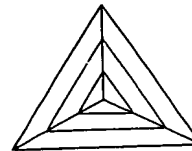
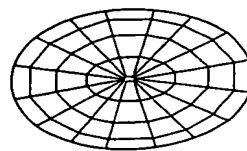
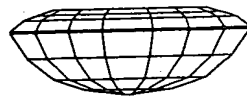
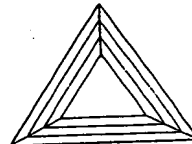
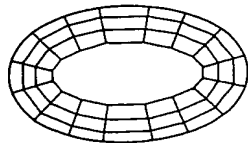
fig. 29

Step or trap cuts



rectangular

emerald

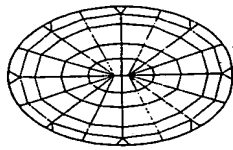
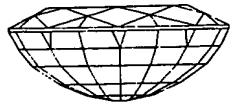
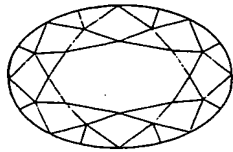


oval

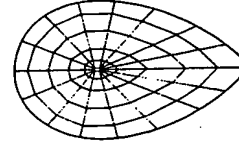
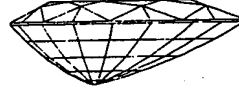
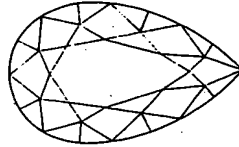
triangular

fig. 30

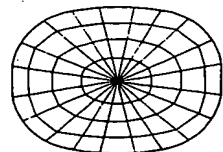
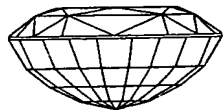
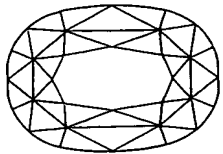
Mixed cuts



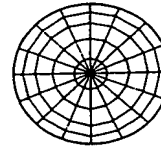
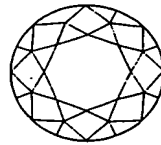
oval



pear



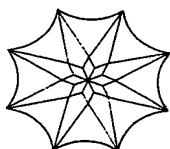
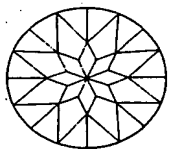
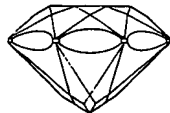
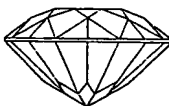
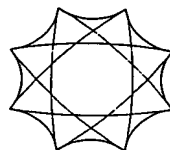
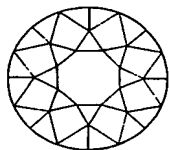
Ceylon



round

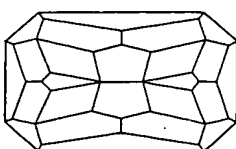
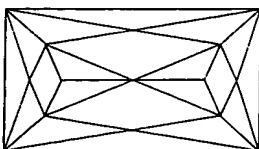
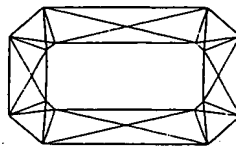
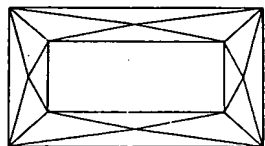
fig. 31

Variants of the foregoing and special cuts



zircon

star



scissors cut

scissors cut with truncated corners



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(760) 603-4500
FAX: (760) 603-1814

IL 30 1998

DIAMOND GRADING REPORT

THE FOLLOWING WERE, AT THE TIME OF THE EXAMINATION, THE CHARACTERISTICS OF THE DIAMOND DESCRIBED HEREIN BASED UPON 10X MAGNIFICATION (FULLY CORRECTED TRIPLET LOUPE AND BINOCULAR MICROSCOPE), DIAMONDITE AND MASTER COLOR COMPARISON WHEELS, ULTRAVIOLET LAMPS, MILLIMETER GAUGE, CARAT BALANCE, OPTICSCOPE, AND ANCILLARY INSTRUMENTS AS NECESSARY.

RED SYMBOLS DENOTE INTERNAL CHARACTERISTICS (INCLUSIONS). GREEN SYMBOLS DENOTE EXTERNAL CHARACTERISTICS (BLEMISHES). SYMBOLS INDICATE TYPE, POSITION AND APPROXIMATE SIZE OF CHARACTERISTICS. DETAILS OF FINISH ARE NOT SHOWN. DIAGRAM MAY BE APPROXIMATE.

SHAPE AND CUTTING STYLE... CUT-CORNERED RECTANGULAR MIXED CUT
Measurements... 13.49 X 12.44 X 7.88 MM.
Weight... 10.32 CARATS

PROPORTIONS...
Depth... 64.2 %
Table... 63 %
Girdle... MEDIUM
Culet... NONE

FINISH
Polish... VERY GOOD
Symmetry... VERY GOOD

CUT GRADE... SI1

COLOR GRADE... I

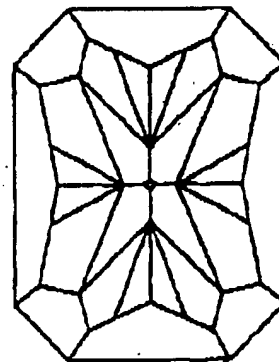
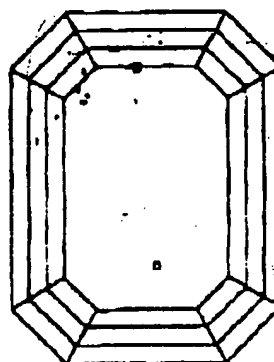
Fluorescence... FAINT

COMMENTS:

PINPOINTS ARE NOT SHOWN.

KEY TO SYMBOLS

- CRYSTAL
- KNOT
- ☁ CLOUD
- ~ FEATHER
- ∧ NEEDLE

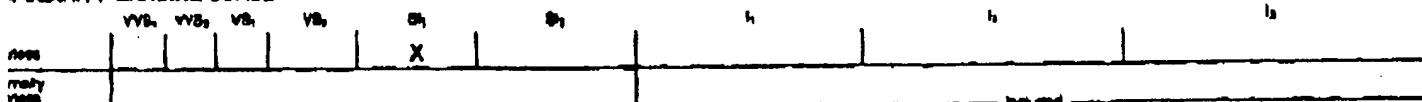


ORIGINAL

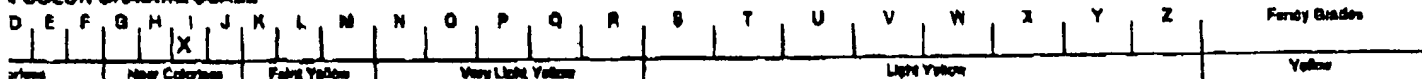
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CLARITY GRADING SCALE



COLOR GRADING SCALE



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RED SYMBOLS DENOTE INTERNAL CHARACTERISTICS (INCLUSIONS). GREEN SYMBOLS DENOTE EXTERNAL CHARACTERISTICS (BLEMISHES). SYMBOLS INDICATE TYPE, POSITION AND APPROXIMATE SIZE OF CHARACTERISTICS. DETAILS OF FINISH ARE NOT SHOWN. DIAGRAM MAY BE APPROXIMATE.

KEY TO SYMBOLS CLOUD

SHAPE AND CUTTING STYLE ... CUT-CORNERED SQUARE MIXED CUT,
Measurements ... 5.03 X 4.96 X 3.50 MM.
Weight ... 0.63 CARATS

PROPORTIONS ...
Depth ... 70.6 %
Table ... 56 %
Girdle ... THIN
Culet ... VERY SMALL

FINISH
Polish ... VERY GOOD
Symmetry ... VERY GOOD

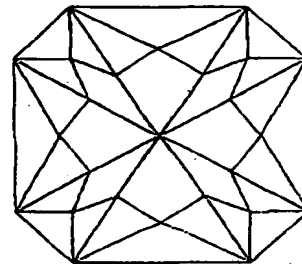
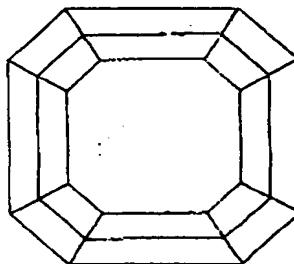
CLEARITY GRADE ... VS1

COLOR GRADE ... I

Fluorescence ... NONE

REMARKS:

"TIFFANY & CO." has been inscribed on the girdle.

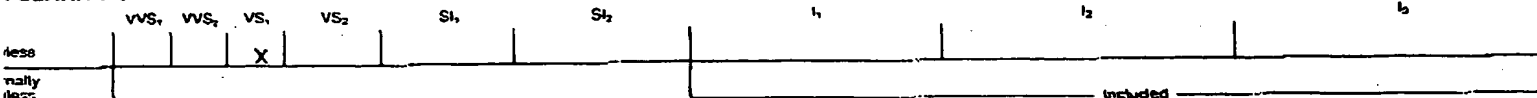


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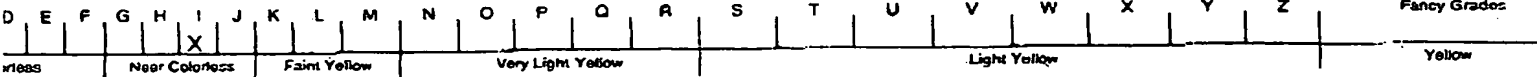
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CLARITY GRADING SCALE



COLOR GRADING SCALE



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